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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RODRIGUEZ, PAUL L

ART UNIT PAPER NUMBER

2125

DATE MAILED: 02/05/2004

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,766

Applicant(s)

EMOTO, KEIJI

Examiner

Paul L Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-14 and 26-40 is/are pending in the application.
- 4a) Of the above claim(s) 12-14,27-36 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-11,26 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1,3,5-14 and 26-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 27-36 and 40 are directed to an invention that is independent or distinct from the invention as originally claimed. In paper number 5 the Examiner made a restriction requirement, in response to the restriction requirement, the Applicant elected the examination of a double pipe structure. Because the Applicant elected to have the invention of a pipe structure examined, only those claims directed to a pipe structure will be examined. Claims 1, 3, 5-11, 26 and 37-39 are directed toward the elected invention of a pipe structure and only these claims are to be considered by the Examiner. Newly submitted claims 27-36 and 40 are directed to various separate and distinct inventions, specifically an alignment apparatus, a lithography apparatus, an exposure apparatus, a manufacturing method, a maintenance method and a semiconductor manufacturing factory, these claims are considered to be related to separate and distinct inventions because they are presented as independent claims and are directed to specific diverse inventions.

Since applicant has received an action on the merits for the originally presented invention of a pipe structure, this invention has been constructively elected for prosecution on the merits. Accordingly, claims 27-36 and 40 are withdrawn from consideration as being directed to a non-elected invention.

2. Claims 1, 3, 5-11, 26 and 37-39 are presented for examination. Claims 2, 4 and 15-25 have been cancelled, claims 12-14 were previously withdrawn and claims 27-36 and 40 have been withdrawn from consideration as being directed to independent or distinct inventions not previously elected or treated on their merits.

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Drawings

3. The proposed drawing changes were received on 11/19/03. These drawing changes are approved.

Specification

4. The substitute specification filed 11/19/03 has been entered.
5. The disclosure is objected to because of the following informalities: page 17 line 8 recites "This an minimize the...", unclear language, not sure is text is missing.

Appropriate correction is required.

6. The examiner has an example of a specification deficiency in the above, however this may not be the only deficiency. Applicant should make all the necessary corrections to eliminate specification objections.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3, 5-10 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukasawa et al (U.S. Pat 5,611,655) in view of Hosono et al (U.S. Pat 4,906,496).

Fukasawa et al teaches (claim 1, 39) a pipe structure comprising a double pipe (figure 16, col. 17 lines 51-54), having an inner pipe (reference number 44) and a resin outer pipe covering

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an outside of the inner pipe (reference number 141, col. 17 lines 51-55), wherein said double pipe is used in a vacuum chamber having a vacuum atmosphere (reference number 4a, col. 17 lines 39-61, figure, 3, 16, 17, col. 6 lines 19-28) and a discharge mechanism for discharging fluid in a space between the inner pipe and the outer pipe (col. 17 lines 54-55), (claim 3) wherein the inner pipe or the outer pipe has a bellows structure or coil shape (figure 16 reference number 144a), (claim 6, 39) wherein said double pipe keeps a vacuum space between the inner pipe and the outer pipe (col. 17 lines 54-55) and (claim 9) wherein the outer pipe is formed from a resin material nearly free from degassing (col. 17 lines 53) (claim 39) pressure in the chamber is less than pressure of atmosphere in a space between the inner pipe and outer pipe (col. 17 lines 39-61, reference number 45a controls the pressure in the chamber 4a, col. 17 lines 51-55 sets the pressure between pipes, although specific pressures are not disclosed, it would be obvious to have a lower pressure in the vacuum chamber than between the inner and outer pipe because the negative pressure in the pipe is simply for evacuating any inert gas that may have leaked from the inner pipe) and the pressure of atmosphere in the space between the inner and outer pipe is less than the pressure in the inner pipe (col. 17 lines 51-55, obvious, the negative pressure to evacuate must be less than the pressure of the inner pipe, that is the only way it would evacuate).

Fukasawa et al fails to teach wherein the inner pipe is resin, wherein the inner pipe in the outer pipe includes a plurality of inner pipes, wherein the inner pipe is formed from a flexible resin material, wherein the inner pipe is formed from a more flexible material than a material of the outer pipe and wherein the outer pipe is thinner than the inner pipe.

Hosono et al teaches a double pipe (figure 2) having a resin inner pipe (col. 3 lines 13-18), (claim 5) wherein the inner pipe in the outer pipe includes a plurality of inner pipes (figure 2, col. 3 lines 13-30, 58-64), wherein the inner pipe is formed from a flexible resin material (col.

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3 lines 13-18), (claim 8) wherein the inner pipe is formed from a more flexible material than a material of the outer pipe (col. 3 lines 34-45, ranges of thickness listed, a thinner inner pipe than the outer would provide a more flexible material), and wherein the outer pipe is thinner than the inner pipe (col. 3 lines 34-45, based on thickness provided).

Fukasawa et al and Hosono et al are analogous art because they are both related to using a double pipe, to the passing of fluids or gas and to minimize leaking.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the inner resin pipe of Hosono et al in the vacuum process apparatus of Fukasawa et al because Hosono et al teaches an improved double walled pipe that provides improved flexibility, can be produced with improved dimensional accuracy, can be easily attached to an end connector (col. 2 lines 3-21) and that the double walled pipe can use the separate passages for the passing of different fluids or gases (col. 3 lines 54-57) improving pipe functionality.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukasawa et al (U.S. Pat 5,611,655) in view of Hosono et al (U.S. Pat 4,906,496).

Fukasawa et al in as modified by Hosono et al discloses most all of the instant invention as applied to claim 1. Hosono et al fails to teach wherein the outer pipe has a thickness of 10 μm to 100 μm inclusive.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to include the thickness of the outer pipe in the measurements of 10 μm to 100 μm inclusive because applicant does not disclose that a thickness

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of 10 μm to 100 μm provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with a outer pipe thickness of 100 μm (discloses as .1mm) because Hosono et al also teaches that thickness' of the material can be as small as 50 μm and teaches that the invention is not limited to the recited dimensions and sizes (col. 3 lines 34-57).

Therefore, it would have been obvious matter of design choice to modify Fukasawa et al in view of Hosono et al to obtain the invention as specified in claim 11.

10. Claims 26, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukasawa et al (U.S. Pat 5,611,655) in view of Hosono et al (U.S. Pat 4,906,496) as applied to claim 1 above, and further in view of Taniguchi et al (U.S. 4,475,223).

Fukasawa et al as modified by Hosono et al teaches a vacuum process apparatus that uses a double pipe vacuum structure as recited in claim 1 for the reasons above and also teaches a stage in the vacuum chamber (Fukasawa et al reference number 71, figure 8), and wherein the stage in is in a chamber having an inert atmosphere (Fukasawa et al col. 5 lines 55-67, col. 18 lines 58-65), differing from the invention as recited in claims 26 and 37 in that their combined teaching lacks wherein said double pipe is coupled or connected to the stage.

Taniguchi et al teaches an exposure system wherein said pipe is coupled to the stage (figure 7b).

Fukasawa et al as modified by Hosono et al and Taniguchi et al are analogous art because they are both related to wafer processing systems.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the connection to a stage of Taniguchi et al in the vacuum process apparatus of Fukasawa et al as modified by Hosono et al because Taniguchi et al teaches an improved method and apparatus for transferring submicron patterns on to wafers with improved accuracy, improving production yield, using a vacuum actuated stage (col. 2 line 40 – col. 3 line 22).

Response to Arguments

11. Applicant's arguments filed 11/19/03 have been fully considered but they are not persuasive.

Applicant argues that the cited art, whether taken individually or in combination does not teach many features of the present invention. Applicant specifically argues that the citations do not teach or suggest that a double pipe is used in a vacuum chamber having a vacuum chamber atmosphere. Examiner disagrees and relies upon Fukasawa et al to teach these features, figure 16 clearly teaches a double pipe structure, reference number 4a-c are clearly vacuum chambers and Fukasawa et al also teaches that the disclosed apparatus of the present invention is very effective when the apparatus is installed in an expensive clean room (col. 10 lines 59-65), clean rooms are well known environments that utilize pressure differentials to maintain the clean room environment, therefore the double pipe structure would be considered to be in a vacuum chamber and atmosphere.

Applicant argues that the citations do not teach a double pipe for reducing gas leaking, col. 17 line 51-54 of Fukasawa et al clearly teaches the prevention of leakage using a double pipe.

Applicant argues that the citations do not teach that the double pipe assures flexibility such as bending. Examiner found no claim language as to the assurance of flexibility but does rely on Hosono et al to teach a resin inner and outer structure that provides flexibility of a pipe.

Applicant argues that the citations do not teach the double pipe coupled to the stage, Examiner relied upon the teaching of Taniguchi et al to teach coupling a vacuum source to a stage, combination of these citations is considered proper. Vacuum chucks and stages are well known in the semiconductor processing arts.

Regarding the arguments directed toward the Azarya et al and Shiozawa et al references, these references are no longer used for the rejection of claims directed toward the pipe structure, the references were previously used to address the claim limitations that have been cancelled by the amendment filed 11/19/03. The newly submitted claims (27-36 and 40), containing limitations addressed by the Azarya et al and Shiozawa et al references are now directed toward separate and distinct inventions and have been withdrawn from consideration based upon applicant's previous election.

Regarding the arguments relating to claims 27-40, only claims 37-39 are directed toward a pipe structure and have therefore been treated on their merits. Applicant provided no new arguments as to the citation deficiencies with respect to claims 37-39 therefore because the above arguments were not persuasive with respect to claims 1 and 26 the Examiner has also rejected claims 37-39 above.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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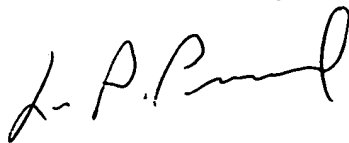
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L Rodriguez whose telephone number is (703) 305-7399. The examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

Paul L Rodriguez
Examiner
Art Unit 2125



LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

PLR
1/28/03



Argued 1/25/04
Bnd

8/8

FIG. 12

PRIOR ART

